FINANCIAL HISTORY

In an industry requiring very large capital investment for start-up, Data Disc, Incorporated has been able to innovate and grow from an initial loan of $68,000. For the first four years of operation no additional working capital was used.

In 1966 and 1967 the Company obtained $300,000 and $150,000 respectively from the sale of common stock to Bessemer Securities Corporation.

In 1968 the Company obtained $600,000 from the sale of common stock to Woolard and Company.

In 1969 the Company obtained $600,000 from the sale of common stock to Woolard and Company, Bessemer Securities and Tracor.

Additional capital has been obtained by the sale of licenses to some of the major computer corporations.

During the first five years of operation the Company was primarily involved in the development and production engineering of the basic electromechanical products. For the most part revenue was obtained from the sale of licenses and R & D contracts. The Company now generates more than 90% of its revenue by the sale of standard products to a broad customer list.

All engineering development work has been expensed as incurred and intangible assets such as patents, know-how, trade secrets, et cetera, are being carried at zero value. Because of the competitive advantage enjoyed by the Company due to the proprietary recording techniques this conservative accounting philosophy tends to greatly undervalue the assets.

FIVE YEAR FORECAST

A growth rate of greater than 50% per year for the next five years is predicated on estimates of the total market and the opportunities that can be exploited within the financial and technical framework of the Company.

Some of the factors that will be responsible for this growth are as follows:

1) New capital investment ~~([redacted])~~ will allow Data Disc to expand all line functions thus accelerating growth.

2) New products are receiving excellent acceptance in rapidly expanding new markets such as ~~video recording~~. graphic displays and [redacted] video recording.

3) The overall yearly growth of the computer industry could account for an automatically expanding market for the Company's products.

4) The shift toward systems sales will significantly increase dollar volume per unit sale.

PRODUCTS

The Company offers seven standard products.

1) ~~F Series~~ 7200 Disc Memory System

A compact rotating disc memory system stores 6.4 million bits with access to any of this data in an average of 17 milliseconds.
The major advantage of the F Series over all other systems is the very high information density made possible by Data Disc proprietary design, resulting in more bits stored at a much lower cost.

2) ~~F~~ 6600 Parallel Digital System

This system has flexibility not available in any other rotating memory presently marketed. Each track on the disc has independent read-write capability. The tracks (up to 72) can be used in any combination with no program restrictions.

3) Television Display System

This system combines a high capacity disc memory and television monitors in a versatile display system which can store and display up to 128 ~~TV~~ pictures. The displays may be alphanumeric, graphic or a combination of both.

4) M Video Disc Recorder

The M Video Disc Recorder can store 300 high resolution TV pictures on a single surface. The ability to record information at very small wavelengths due to proprietary techniques makes possible the recording and playing back of high resolution graphical information such as television pictures.

5) F Parallel Video System

A TV video frame can be stored on each track and each track can provide refresh memory for a CRT monitor.
This system is similar to the Parallel Digital system in that each track on the disc (up to 64 tracks) has independent read/write capabilities for analog recording.

6) M Series Disc Memory System

An interchangeable single disc cartridge stores 13 million bits on two surfaces. A magnetic head assembly is mechanically moved to any one of 128 concentric tracks to read or write digital information. The random access to data is controlled electronically by a computer or other means.

7) Nickel-Cobalt Plated Magnetic Discs

This product line is offered in sizes ranging from eight inches to twenty-four inches in diameter.

The characteristic of the discs can be tailored to customer requirements for resolution, signal output and other parameters. Because of the very thin magnetic coating (10 microinches) and other factors, the plated disc is far superior to other types of magnetic coating.

Data Disc, Incorporated produces the finest discs on the market according to customer statements.

LICENSES

Many of the major corporations in the computer industry have purchased licenses from Data Disc. This fact is impressive since these companies have spent millions of dollars attempting to develop similar products.

Licensees:

IBM
UNIVAC
GENERAL ELECTRIC
ELLIOTT-AUTOMATION, LTD.
FRIDEN

IBM (1969)

The most recent license has been sold to IBM and gives IBM limited manufacturing rights to the proprietary Magnetic Head technology. Since IBM has, up to now, been the leader in setting technological trends it is possible that, with this license, IBM will cause Data Disc techniques to become the accepted next step in disc recording.

IBM will make a cash payment of $50,000.00 for the license and, in addition, cross license Data Disc, at no charge, for all IBM patents on magnetic plating. The relatively low cash payment is due to the restrictive nature of the license. IBM has the right to manufacture only 20,000 magnetic heads, after which a new license must be negotiated.

UNIVAC (1964

This license was sol to Univac for a cash payment of $100,000.00 and royalties of not more than $75,000.00 when Univac has sold 1000 units as described by the license. Univac has released this system with the 9200 computer after four years of development.

GENERAL ELECTRIC (1964)

A license for the manufacture of the M series disc system was sold to General Electric for $95,000.00. This was a fully paid-up license with no royalties due. To the present, General Electric has not sold any products based on the license.

ELLIOTT AUTOMATION, LTD. (1964)

A license for the manufacture of the M series and F series disc memory system was sold for $150,000.00 plus 5 percent of system sales price. Elliott has not manufactured or sold any systems.

FRIDEN CORPORATION (1963)

A license was sold for $50,000.00, giving Friden rights to manufacture M series disc memory systems. In addition royalties would be paid on the first 3000 units manufactured. Friden has not been successful in manufacturing this system.

Data Disc, Incorporated was the first company (1962) in the world to introduce a changeable disc pack system. This product used an in-contact head disc interface to attain bit packing densities up to ten times greater than other disc systems. Even today no other disc system is closer than half the bit packing density of the standard Data Disc products.

There are two major reasons why Data Disc techniques have not become industry standards:

1) IBM introduced a changeable Disc pack system soon after Data Disc began marketing and the industry copied the IBM system in order to be IBM compatible.

2) Data Disc did not have the capital resources to properly exploit the proprietary techniques.

Now eight years later it appears that the Data Disc technology will form the basis for the next generation of disc memory systems.

COMPETITION

A number of small, independent companies manufacture rotating memory systems for digital applications. The most important of these are:

Vermont Research Corporation
Digital Development Corporation
Applied Magnetics, Incorporated

In addition, division of large corporations sell in the market areas of interest to Data Disc, Incorporated. The most important of these are:

General Instrument - Magnahead Division
Burroughs Corporation - Electrodata Division
Excello Corporation - Bryant Computer Division

The largest present market for disc memories is in the IBM Changeable Disc Pack System such as the IBM 2311 and IBM 2314. Many companies have copied the IBM technology. Some of these are:

Control Data	Information Storage Systems
RCA	Linnell Corporation
Honeywell	Marshall Industries
Memorex	

Even though Data Disc, Incorporated pioneered the changeable disc pack concept (the M series was marketed and delivered almost a year prior to IBM's Changeable Disc System) the IBM disc drive market is not considered of competitive interest by the Company.

The recording of video and analog data on rotating discs is a relatively new market but one which promises to become very large, perhaps the most important market area for Data Disc. All of the competitive equipment in this market area has been developed using techniques proprietary to Data Disc. The major companies in this field are:

Ampex Corporation

IBM

Westinghouse

RCA

Data Memories

The marketing strategy has been to concentrate selling effort to OEM accounts and in those areas where development contracts could lead to future products; such as video and display systems.

The competition in all of these areas has been negligible and the major restraint to company sales has been reliability and customer learning problems with the products, especially with the F series disc memory system.

The Company anticipates a reversal of this state of affairs within the next two to four years. Thus, the reliability and customer acceptance will continuously improve and the competition will continuously increase.

A factor of great importance to Data Disc is pricing, and this crucial variable is not expected to be under any pressure for at least two years. The reason is the advanced techniques used by Data Disc and the proprietary position the Company holds with relation to these techniques.

In summary:

1) There is presently no significant competition and the only major depressant is temporary start-up problems and lack of depth in marketing.
2) Because the potential market is enormous, many new companies are being started to exploit the market. Therefore serious competition can be expected in two to four years.
3) Profit erosion due to price cutting is not anticipated for many years because of technical advantages combined with a forecasted steady decrease in manufacturing costs as well as lowered costs in other areas as a result of increased volume.

4) Since the long range plan is to sell to users it is conceivable that the competition will include our present OEM customers.

PATENTS

Data Disc, Incorporated has pioneered in the field of very high density recording by developing the first in-contact disc recording systems.

The Company policy is to apply for patents only when it is clearly established that the investment will bring a very good return to the Company. There are many company developed devices and techniques that have been judged patentable; but the decision has been to treat these developments as trade secrets.

The following lists the patents that have been granted and those that have been applied for:

Patents granted:

Armin Miller - DATA STORAGE SYSTEM AND METHOD, Serial No. 70,994, filed November 22, 1060. Patent granted on December 28, 1965 under U. S. Letters Patent No. 3,226,700.

Morris Kohn - TRANSDUCER ASSEMBLY, Serial No. 347,827, filed February 27, 1964 in the U. S. Patent Office.

Patents Pending:

William Ward Stevens, Jr. - Patent application for DATA STORAGE SYSTEM, Serial No. 413,170, filed in the U.S. Patent Office on November 23, 1964.

William Ward Stevens, Jr. - Patent application for MAGNETIC HEAD ASSEMBLY AND METHOD OF MANUFACTURE, Serial No. 602,212, filed in the U. S. Patent Office on December 16, 1966.

Charles A. Lindberg - Patent Application for MAGNETIC RECORDING APPARATUS, Serial No. 476,618, filed in the U. S. Patent Office on August 2, 1965.

DATA-DISC, INCORPORATED

Sales------ Periods 1-13 1968/69

Customers over $10,000

Hewlett Packard	$ 210,900
Tektronix	148,600
Nissei Sangyo Co., Ltd.	141,200
Raytheon	140,800
Electronic Associates, Inc.	131,700
Berkeley Scientific Laboratores	128,300
IBM	126,600
NASA	109,800
Philco Ford	106,000
Visual Electronics	103,500
Lawrence Radiation Laboratories	98,820
Bell Telephone Laboratories	93,100
I.T.T.	86,700
Westinghouse	65,500
Scientific Control Corporation	57,800
Sandia	55,900
U.S. Navy	52,300
Frankford Arsenal	51,300
Informational International, Inc.	44,600
Sanders Associates	44,500
University of Texas	41,600
Varian Data Machines	41,500
General Electric	39,800
Ampex	35,500
Mitre Corporation	35,200
Interdata	34,600
Video Systems	32,800
Astrodata	31,000
Aerospace	28,600
Lockheed	27,900
University of California	27,600
Monitor Systems	26,800
University of Utah	26,500
University of Illinois	24,500
Sylvania	24,100
Basic Timesharing	23,600
Burroughs Corporation	21,700
CERN	20,400
Western Electric	17,700
Kyokuto Boeki Kaisha, Ltd.	17,000
RCA	16,900
Chubb-Moseler	16,800
Dresser Systems	15,600
Government of Isreal	15,200
Shell Development	15,200

Infotronics	14,000
National Cash Register	13,900
University of Minnesota	13,900
Fort George Meade, Md.	13,500
Univac	13,200
CBS Labs	12,400
University of Kansas	12,100
Carnegie Mellon University	12,100
Thomas Electric	11,800
Electrical Optical	11,700
Remington Rand	11,000
DNA	10,900
SLAC	10,500
Technical Operations	10,400
	$ 2,827,420

Total Sales Periods 1-13 $ 2,937,197

NEW PRODUCT PLANNING

The major objective in product planning is to specify and develop optimum products with relation to the market and within the framework of the company resources and its unique capabilities.

Research and development will be accelerated in fundamental areas to ensure a continuing technological lead in the industry. The major emphasis will be:

1) Improvements in magnetic head design
2) Improvement in magnetic disc specifications and manufacturing methods
3) Development of in-depth systems capability in both hardware and software.

For the near term, development is planned to improve and expand the present product line by evolving products that are lower cost and higher in performance; but based on present products. The most important areas of development will be:

1) Television Display Systems

   A family of products based on the disc memory storing and refreshing graphic information for a television-type cathode ray tube display terminal. Initially these products will be sold to large systems users; but the long range plan is to develop and sell complete display systems to the ultimate user.

2) Video Disc Systems

   The Company's proprietary position is possibly most valuable in the area of recording and playing back video pictures. This new field for disc recording is attracting great interest in such diverse areas as X-ray recording, telemetry recording from satellites, radar analysis and many more.

   The long range strategy is to develop standard building blocks for video systems and develop user products from these building blocks as soon as market opportunities become clearly defined.

3) 7200 Disc Memory Systems

The storage capacity and performance for this product category will be greatly expanded to take advantage of the very large present market. In addition, Data Disc intends to develop and sell a greater part of the disc system in order to realize greater dollar volume per sale and also to have more control of the reliability of the total system.

The following flow-chart depicts the product development history and the trends for future products. The basic technology in magnetic heads and discs form the basis for all present products and those in the near future. Also, developments in electronics and mechanics are more and more becoming building blocks for a large class of related products in digital and analog applications.